

CLAIMS

1. A method for transferring packets of data from a first group, a second group, and a third group, comprising the steps of:

- 5 identifying a first number, a second number, and third number
corresponding to the first, second, and third groups, respectively,
wherein the first, second, and third numbers each have a magnitude
that is inversely related to an assigned bit rate of the group of the
first, second, and third groups to which it corresponds;
- 10 providing a first counter, a second counter, and a third counter
corresponding to the first, second, and third groups, respectively;
loading the first, second, and third counters with the first, second, and
third numbers, respectively;
- 15 determining a first selected counter of the first, second, and third counters
that has the lowest value;
- transferring a packet of data from a first selected group of the first,
second, and third groups that corresponds to the first selected
counter;
- loading the first selected counter with the number of the first, second, and
20 third number that corresponds to the first selected group;
- after the step of loading the first selected counter, determining a second
selected counter of the first, second, and third counters that has the
lowest value;
- after the step of loading the first selected counter, transferring a packet of
25 data from a second selected group of the first, second, and third
groups which corresponds to the second selected counter; and

loading the second selected counter with the number of the first, second, and third numbers that corresponds to the second selected group.

2. The method of claim 1, further comprising:

5 after the step of loading the second selected counter, determining a third selected counter of the first, second, and third counters has the lowest value;

10 after the step of loading the second selected counter, transferring a packet of data from a third selected group of the first, second, and third groups which corresponds to the third selected counter; and loading the third selected counter with the number of the first, second, and third numbers that corresponds to the third selected group.

15 3. The method of claim 1, wherein the step of determining the second selected counter is further characterized as determining if the lowest value is provided by more than one of the first, second, and third counters, and if so, determining the second selected counter by a predetermined criteria.

20 4. A method for transferring packets of data from a plurality of groups, wherein each group has a corresponding number that bears an inverse relationship to an assigned bit rate of its corresponding group, comprising the steps of:

providing a plurality of counters, each corresponding to a group of the plurality of groups;

25 loading each of the counters of the plurality of counters with the number of the plurality of numbers that corresponds to the group that said each of the counters corresponds;

determining a first selected counter of the plurality of counters that has the lowest value;

transferring a packet of data from a first selected group of the plurality of groups that corresponds to the first selected counter;

5 loading the first selected counter with the number of the plurality of numbers that corresponds to the first selected group;

after the step of loading the first selected counter, determining a second selected counter of the plurality of counters that has the lowest value;

10 after the step of loading the first selected counter, transferring a packet of data from a second selected group of the plurality of groups that corresponds to the second selected counter; and

loading the second selected counter with the number of the plurality of numbers that corresponds to the second selected group.

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5. The method of claim 4, further comprising:

after the step of loading the second selected counter, determining a third selected counter of the plurality of counters has the lowest value;

20 after the step of loading the second selected counter, transferring a packet of data from a third selected group of the plurality of groups which corresponds to the third selected counter; and

loading the third selected counter with the number of the plurality of numbers that corresponds to the third selected group.

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6. The method of claim 4, wherein the step of determining the second selected counter is further characterized as determining if the lowest value is provided by more than one of the plurality of counters, and if so, determining the second selected counter by a predetermined criteria. :

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7. A traffic shaper for determining the order of transmission of information packets, said information packets are arranged in at least two groups, the shaper comprises:

i) means for utilizing a parameter assigned to each group;

10 ii) means for obtaining an initial value for each group from the parameter of that group;

iii) a comparator for comparing the initial values of each group, thereby identifying an information packet with the lowest initial value;

15 iv) a multiplexer for switching the information packet with the lowest initial value to a transmitter;

v) an incrementer for incrementing the initial value of the transmitted group with the parameter assigned to the group, so as to calculate an up-dated value;

vi) wherein the comparator compares the up-dated value with the values associated with each of the other groups, thereby identifying a subsequent

20 information packet with the lowest value; and

vii) means for switching the subsequent information packet associated with the lowest value to a transmitter.

25 8. A traffic shaper according to claim 7 wherein the transmitter is located on a chip.

9. A traffic shaper according to claim 7, wherein the comparator is further characterized as determining if more than one information packet has the same value and in the event that more than one packet of information has the same value, selecting the information packet with the lower initial value.

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10. A traffic shaper according to claim 7 wherein the said parameter is a function of (the inverse of the transmission rate for an information packet of each group) / (total bandwidth available).

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11. A circuit for transferring packets of data from a plurality of groups, wherein each group has a corresponding number that bears an inverse relationship to an assigned bit rate of its corresponding group, comprising the steps of:

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a plurality of counters, each corresponding to a group of the plurality of groups;

determining means, coupled to the plurality of counters, for determining a selected counter of the plurality of counters that has the lowest value;

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a plurality of data transfer means, each corresponding to a group of the plurality of groups, for transferring data from a selected group that corresponds to the selected counter; and

loading means for loading the selected counter with the number that corresponds to the selected group.

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12. The circuit of claim 11, wherein the determining means is further characterized as having means for determining if more than one of the groups has the lowest value and if so, determining the selected counter based on predetermined criteria.

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13. The circuit of claim 11, further comprising a multiplexer coupled to the plurality of data transfer means.